



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2019-1060; Product Identifier 2018-CE-020-AD; Amendment 39-21141; AD 2020-12-06]**

**RIN 2120-AA64**

**Airworthiness Directives; Gulfstream Aerospace Corporation Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for all Gulfstream Aerospace Corporation (Gulfstream) Model G-IV airplanes. This AD was prompted by reports of un-commanded nose wheel steering turns. This AD requires replacing the nose wheel steering servo valve manifold, incorporating revised operating procedures into the airplane flight manual (AFM), doing a records inspection for any incidents of un-commanded nose wheel steering turns, and reporting the results to the FAA. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Gulfstream Aerospace Corporation, Technical Publications Dept., P.O. Box 2206, Savannah, Georgia 31402-2206; telephone: (800) 810-4853; fax 912-965-3520; email: [pubs@gulfstream.com](mailto:pubs@gulfstream.com); Internet: <https://www.gulfstream.com/customer-support>. You

may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2019-1060; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations is Docket Operations, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Alex Armas, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5538; fax: (404) 474-5605; email: alex.armas@faa.gov.

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all Gulfstream Model G-IV airplanes. The NPRM was published in the *Federal Register* on December 27, 2019 (84 FR 71333). The NPRM was prompted by reports of un-commanded nose wheel steering turns. An investigation revealed the supplier compromised the seals during assembly of the electro-hydraulic servo valves, which allows moisture to enter the valve. During cold soak conditions, the moisture forms ice crystals in the servo valve armature air gaps, which may cause the valve armature to displace to a non-neutral position. This condition, if not addressed, could result in an un-commanded nose wheel position once power is applied to the nose wheel servo and subsequent lateral runway departure. To address this

condition, the supplier improved their production quality control process to reduce the risk of compromised seals in the nose wheel steering servo valve. Gulfstream also revised the normal, abnormal, and emergency procedures in the AFMs related to nose wheel steering un-commanded turns.

Accordingly, this AD requires replacing the nose wheel steering servo valve manifold, incorporating revised operating procedures into the AFM, doing a records inspection for any incidents of un-commanded nose wheel steering turns, and reporting the results to the FAA. The FAA is issuing this AD to address the unsafe condition on these products.

### **Comments**

The FAA gave the public the opportunity to participate in developing this final rule. The following presents the comment received on the NPRM and the FAA's response to the comment.

### **Request to Add Crew Training Verbiage**

Gulfstream requested the FAA add verbiage to the preamble referencing training that Gulfstream developed for the un-commanded nose wheel steering issue. Gulfstream stated the flight crew training is an important mitigation component should an aircraft experience an un-commanded nose wheel steering turn during landing.

The FAA disagrees. The reduction in risk associated with incorporation of the flight crew training verbiage is minimal. The sudden and unpredicted nature of an un-commanded nose wheel steering event allows for little to no response from the flight crew, even with the related training. The primary means of mitigation for an un-commanded nose wheel steering event is replacement of the nose wheel steering valve manifold assembly, which will prevent un-commanded turns from occurring. The FAA did not change this AD based on this comment.

### **Conclusion**

The FAA reviewed the relevant data, considered the comment received, and determined that air safety and the public interest require adopting this final rule as proposed.

#### **Related Service Information under 1 CFR part 51**

The FAA reviewed Gulfstream IV Customer Bulletin Number 244, dated March 12, 2018; Gulfstream G300 Customer Bulletin 244, dated March 12, 2018; and Gulfstream G400 Customer Bulletin 244, dated March 12, 2018. For the applicable airplane configuration, each customer bulletin describes procedures for replacing the nose wheel steering servo valve manifold assembly.

The FAA also reviewed Gulfstream IV Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-GIV-OPS-0001, Revision 52, dated October 30, 2017; Gulfstream G300 Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-G300-OPS-0001, Revision 20, dated October 30, 2017; and Gulfstream G400 Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-G400-OPS-0001, Revision 20, dated October 30, 2017. For the applicable airplane configuration, each AFM document provides revisions to the AFM with instructions for flight crew to follow if un-commanded nose wheel steering turns occur.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

#### **Costs of Compliance**

The FAA estimates that this AD will affect 425 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Incorporate AFM revisions	1 work-hour X \$85 per hour = \$85	Not applicable	\$85	\$36,125
Replace nose wheel steering servo valve	7 work-hours X \$85 per hour = \$595	\$63,624	\$64,219	\$27,293,075
Records review and reporting of the review results	2 work-hours X \$85 per hour = \$170	Not applicable	\$170	\$72,250

According to the manufacturer, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. The FAA does not control warranty coverage for affected individuals. As a result, the FAA has included all costs in this cost estimate.

### Paperwork Reduction Act

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0056. Public reporting for this collection of information is estimated to be approximately 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Federal Aviation Administration, 10101 Hillwood Parkway, Fort Worth, TX 76177-1524.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979), and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

**PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2020-12-06 **Gulfstream Aerospace Corporation**: Amendment 39-21141; Docket No. FAA-2019-1060; Product Identifier 2018-CE-020-AD.

**(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Gulfstream Aerospace Corporation Model G-IV airplanes, certificated in any category.

**(d) Subject**

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 32, Landing Gear.

**(e) Unsafe Condition**

This AD was prompted by reports of un-commanded nose wheel steering turns. The FAA is issuing this AD to prevent moisture from entering the nose steering wheel servo valve, which could freeze and cause an un-commanded nose wheel steering

position during touchdown. The unsafe condition, if not addressed, could result in a lateral runway departure.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Airplane Flight Manual Revisions**

Within 30 days after the effective date of this AD, revise your airplane flight manual (AFM) by incorporating the revision applicable to your airplane configuration as listed in paragraphs (g)(1) through (3) of this AD:

(1) Gulfstream IV Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-GIV-OPS-0001, Revision 52, dated October 30, 2017;

(2) Gulfstream G300 Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-G300-OPS-0001, Revision 20, dated October 30, 2017; or

(3) Gulfstream G400 Airplane Flight Manual, Gulfstream Aerospace Document Number FAC-AC-G400-OPS-0001, Revision 20, dated October 30, 2017.

**(h) Replace the Nose Wheel Steering Servo Valve Manifold**

Within 36 months after the effective date of this AD, replace the nose wheel steering servo valve manifold with nose wheel steering servo valve manifold part number 5100-11 or 5105-5 in accordance with the Accomplishment Instructions of the customer bulletin that applies to your airplane configuration as listed in paragraphs (h)(1) through (3) of this AD, except you are not required to comply with step H:

(1) Gulfstream IV Customer Bulletin Number 244, dated March 12, 2018;

(2) Gulfstream G300 Customer Bulletin 244, dated March 12, 2018; or

(3) Gulfstream G400 Customer Bulletin 244, dated March 12, 2018.

**(i) Records Inspection and Report of Results**

(1) Between 12 months and 24 months after the replacement of the nose wheel steering valve manifold assembly required in paragraph (h) of this AD, inspect all aircraft



records for entries of an un-commanded nose wheel steering turn.

(2) Within 10 days after the records inspection required in paragraph (i)(1) of this AD, report the results of the inspection, regardless of whether the inspection found any entries, to the FAA by either email: 9-ASO-ATLCOS-Reporting@faa.gov; or by mail: Attn: Continued Operational Safety, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337. The report must include as much of the information listed in paragraphs (i)(2)(i) through (vii) of this AD as is known about the event:

- (i) Date of records inspection;
- (ii) Date and time of all un-commanded occurrences (if any);
- (iii) Airplane serial number;
- (iv) Weather and runway conditions at the time of each occurrence;
- (v) Copy of the pilot's report of the occurrence (if available);
- (vi) Maintenance entry of the root cause of the un-commanded deflection (if available); and
- (vii) Any other information pertinent to the occurrence.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Atlanta ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(k) Related Information**

For more information about this AD, contact Alex Armas, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5538; fax: (404) 474-5605; email: alex.armas@faa.gov.

**(I) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Gulfstream IV Customer Bulletin Number 244, dated March 12, 2018.

(ii) Gulfstream G300 Customer Bulletin Number 244, dated March 12, 2018.

(iii) Gulfstream G400 Customer Bulletin Number 244, dated March 12, 2018.

(iv) Gulfstream IV Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-GIV-OPS-0001, Revision 52, dated October 30, 2017.

(v) Gulfstream G300 Airplane Flight Manual, Gulfstream Aerospace Document Number GAC-AC-G300-OPS-0001, Revision 20, dated October 30, 2017.

(vi) Gulfstream G400 Airplane Flight Manual, Gulfstream Aerospace Document Number FAC-AC-G400-OPS-0001, Revision 20, dated October 30, 2017.

(3) For service information identified in this AD, contact Gulfstream Aerospace Corporation, P.O. Box 2206, Savannah, Georgia 31402-2206; telephone: (800) 810-4853; fax 912-965-3520; email: pubs@gulfstream.com; Internet: <https://www.gulfstream.com/customer-support>.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: [fedreg.legal@nara.gov](mailto:fedreg.legal@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on June 2, 2020

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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